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## Disclaimer

#### Protection of Data from Discovery Admission into Evidence

23 U.S.C. 148(h)(4) states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section[HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data.

23 U.S.C. 148(h)(4) states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section[HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data.23 U.S.C. 409 states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data."

### **Executive Summary**

On behalf of the Rhode Island Department of Transportation (RIDOT) and the Office on Safety we are pleased to present the Highway Safety Improvement Program Annual Report for FY21.

In the past year, RIDOT has continued to make strides in the HSIP, including development of several systemic programs; streamlined effort to install countermeasures, and expanded local road program.

RIDOT has shifted most of our funding to the systemic program to help stretch our limited safety dollars. RIDOT develop a systemic, risk based GIS-based tool for both the STEP and Horizontal Curve programs. These 2 programs will help address over half of the fatal and serious injury crashes.

RIDOT also began developing a Master Price Agreement (MPA) that can streamline the installation of improvements within 3-6 months from diagnosis as well as help save on overhead costs often seen in larger construction projects. RIDOT revised their State TIP to include the MPA starting in FY22.

RIDOT also began to develop a Local Road program to help locals address safety issues. RIDOT participated in a FHWA Local Road Safety Plan workshop and plans to expand the program in FY22.

### Introduction

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. As per 23 U.S.C. 148(h) and 23 CFR 924.15, States are required to report annually on the progress being made to advance HSIP implementation and evaluation efforts. The format of this report is consistent with the HSIP Reporting Guidance dated December 29, 2016 and consists of five sections: program structure, progress in implementing highway safety improvement projects, progress in achieving safety outcomes and performance targets, effectiveness of the improvements and compliance assessment.

## **Program Structure**

#### **Program Administration**

#### Describe the general structure of the HSIP in the State.

Since 2010, The Rhode Island Department of Transportation (RIDOT) has followed the Highway Safety Manual process to guide their HSIP.

**For network screening,** RIDOT currently focuses on three programs: Roadway Departure; Pedestrian/Bike; and Angle Crashes.

The roadway departure program uses both systemic, risk based approach for curves and clear zones. Crash frequency and SPFs are used to identify hot spots on tangent segments. The Ped/Bike program uses a systemic, risk based approach using the STEP tool RIDOT recently developed. This tool uses over 20 attributes to assign a risk for each unsignalized crossings. For signalized crossings, RIDOT is developing a systemic tool in FY22.

The angle crash program currently uses frequency. RIDOT is developing a systemic risk based tool in FY22.

**For diagnosis,** RIDOT conducts RSAs at most locations. For systemic treatments (curves, mid-block crossing), RIDOT often performs a smaller site visit.

**For countermeasure identification**, RIDOT relies on FHWA low-cost proven safety countermeasures, NCHRP, FHWA reports, and other safety documents to assist with countermeasure identification.

Improvements are designed and implemented in 3 ways: RIDOT Maintenance; Master Price Agreement (MPA-ID/IQ) or Project Management. RIDOT Maintenance and MPA allows RIDOT to streamline low-cost improvements (guardrail, signage, striping, tree removal) between 1 month and 1 year from diagnosis. Project Management is reserves for larger construction projects (roundabout, traffic signal replacement) and can take 1-3 years form diagnosis, funding dependent.

Once completed, the **projects are evaluated** to determine the safety effectiveness of the safety improvements. The resulting data will assist RIDOT with developing their own crash modification factors. RIDOT has developed a CMF for Road Diets and is currently developing them for Curve Delineation and High Friction.

#### Where is HSIP staff located within the State DOT?

Engineering

Traffic Safety reports to the Chief Engineer. However they actively coordinate with Planning, Operations, and Design (Project Management) as part of the HSIP.

#### How are HSIP funds allocated in a State?

- Central Office via Statewide Competitive Application Process
- SHSP Emphasis Area Data

RIDOT selects the majority of HSIP funded projects thru the SHSP EA. A small portion is allotted to outside RIDOT requests. This competitive process still requires alignment with the SHSP.

#### Describe how local and tribal roads are addressed as part of HSIP.

#### **Network Screening**

On an annual basis, the RIDOT identifies the roadway facilities exhibiting the most severe safety needs based on crash severity and frequency/exposure or the predictive method. Through the RIDOT's HSIP, ALL public roads are addressed, focusing on fatal and serious injury crashes in line with their SHSP and the performance measures set forth in MAP-21 and the FAST Act. Most of the State-owned roadway network and some of the local roadways are mapped to a Linear Referencing System; however, the majority of the local roadways is not referenced and is manually reviewed to ensure their inclusion into the HSIP process.

As part of RIDOT's STEP program, all roadways have been assigned a priority scope based on 20+ attributes. RIDOT plans on expanding its other systemic program inventory to local roads in the coming years.

As part of RIDOT's Horizontal Curve Program, all roadways will be reviewed for conformance.

#### **Diagnosis and Implementation**

The RIDOT works with municipalities to identify and mitigate crash issues on locally-maintained roadways. RIDOT has developed a process for locals to request a safety improvement with the intent for locals to perform the "planning" step from the HSIP process. RIDOT will then determine if the improvement is eligible for HSIP funds and distribute the funds needed to the locals so they can administer the construction of the improvements.

RIDOT has worked with several municipalities on pedestrian and bicycle safety. They have developed safety action plans for multiple communities with high pedestrian activity. RIDOT has also reviewed all segments statewide and assigned a "risk" score to them. This will help RIDOT and locals prioritize safety for vulnerable road users.

#### Implementation

To help streamline lower cost improvements on all (state and local) road to help drive down fatalities and serious injuries quicker and show action taken to safety stakeholders, RIDOT is developing a Master Price Agreement contract for lower cost improvements to start in FY2021. This will be funded with HSIP funds and will enable RIDOT to reduce project soft costs and accelerate delivery. The Office of Safety will administer these contracts with the goal to turn projects around within 6 months to a year from study

## Identify which internal partners (e.g., State departments of transportation (DOTs) Bureaus, Divisions) are involved with HSIP planning.

- Design
- Governors Highway Safety Office
- Local Aid Programs Office/Division
- Maintenance
- Operations
- Planning
- Traffic Engineering/Safety

#### Describe coordination with internal partners.

RIDOT works internally with transportation planners (Statewide Planning), RIDOT GIS analysts, RIDOT safety engineers, RIDOT and OHS highway safety program coordinators and RIDOT operations staff as part of the entire HSIP process, including the identification of critical locations and the selection of appropriate countermeasures/ improvements. These partners are involved in Road Safety Assessments (RSAs) that were performed at many of these locations to facilitate this multi-discipline approach.

RIDOT also houses the Office of Highway Safety where the HSIP, HSP, and SHSP are all developed in a coordinated effort focused on developing consistent safety goals. Safety initiatives are now implemented in a more integrated and multi-disciplinary manner, providing RIDOT with more flexibility to direct resources to address particular safety needs. As part of the FAST Act, the RIDOT and OHS along with RI's Office of Performance Management coordinated the development of performance measurement and targets for FY22.

#### Identify which external partners are involved with HSIP planning.

- Academia/University
- FHWA
- Law Enforcement Agency
- Regional Planning Organizations (e.g. MPOs, RPOs, COGs)
- Tribal Agency

#### Describe coordination with external partners.

LEL and FHWA are involved in bi-monthly safety meetings.

The MPO is involved in the TIP process (specifically for safety projects)

RIDOT address all public roads, including tribal agency roadways. Crashes on locally and tribal owned roadways are included in the network screening process. Any safety improvements necessary based on prioritization are coordinated with these agencies.

Tribal agencies are included in the SHSP planning process and are stakeholders on the SHSP steering committee.

## Describe HSIP program administration practices that have changed since the last reporting period.

To help streamline lower cost improvements to help drive down fatalities and serious injuries quicker and show action taken to safety stakeholders, RIDOT is developing a Master Price Agreement contract for lower cost improvements to start in FY2021. This will be funded with HSIP funds and will enable RIDOT to reduce project

soft costs and accelerate delivery. The Office of Safety will administer these contracts with the goal to turn projects around within 6 months to a year from study.

### Program Methodology

## Does the State have an HSIP manual or similar that clearly describes HSIP planning, implementation and evaluation processes?

Yes

A revision to the program manual is slated for 2021 with the addition of state-specific SPFs and CMFs and expanded info on systemic programs. This is currently underway and will be provided when final.

#### Select the programs that are administered under the HSIP.

- Horizontal Curve
- HRRR
- Right Angle Crash
- Roadway Departure
- Safe Corridor
- Wrong Way Driving
- Other-Vulnerable Road Users

### Program: Horizontal Curve

#### Date of Program Methodology:8/2/2021

#### What is the justification for this program?

- Addresses SHSP priority or emphasis area
- FHWA focused approach to safety

#### What is the funding approach for this program?

Funding set-aside

#### What data types were used in the program methodology?

#### Crashes

#### Exposure

•

#### Roadway

- Fatal and serious injury crashes only
- Traffic Volume
- Lane miles

- Horizontal curvature
- Functional classification
- Roadside features

#### What project identification methodology was used for this program?

• Other-Probability of

## Are local roads (non-state owned and operated) included or addressed in this program?

Yes

### Are local road projects identified using the same methodology as state roads?

Yes

#### How are projects under this program advanced for implementation?

• selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

#### Rank of Priority Consideration

Other-Systemic Risk Score:75 Other-Number of K & A:25

### Program: HRRR

#### Date of Program Methodology: 2/8/2021

#### What is the justification for this program?

- Addresses SHSP priority or emphasis area
- FHWA focused approach to safety
- Other-HRRR Special Rule

#### What is the funding approach for this program?

Funding set-aside

#### What data types were used in the program methodology?

Crashes	Exposure	Roadway
<ul> <li>Fatal and serious injury crashes only</li> </ul>	<ul><li>Traffic</li><li>Volume</li></ul>	<ul><li>Horizontal curvature</li><li>Functional classification</li></ul>

### What project identification methodology was used for this program?

• Crash rate

## Are local roads (non-state owned and operated) included or addressed in this program?

Yes

#### Are local road projects identified using the same methodology as state roads? Yes

### How are projects under this program advanced for implementation?

• selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

#### Relative Weight in Scoring

Ranking based on B/C:40 Available funding:20 Other-Systemic Risk Score:40 Total Relative Weight:100

#### Program: Right Angle Crash

#### Date of Program Methodology:10/1/2016

#### What is the justification for this program?

- Addresses SHSP priority or emphasis area
- FHWA focused approach to safety

#### What is the funding approach for this program?

Funding set-aside

#### What data types were used in the program methodology?

Crash	es	Expos	ure	
•	Fatal and serious injury crashes	•	Volume	
	only	٠	Lane miles	

#### What project identification methodology was used for this program?

• Crash frequency

## Are local roads (non-state owned and operated) included or addressed in this program?

Roadway

Yes

**Are local road projects identified using the same methodology as state roads?** Yes

#### How are projects under this program advanced for implementation?

• selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

#### **Relative Weight in Scoring**

Ranking based on B/C:15 Other-Reduction in fatalities and injuries:15 Other-Facility risk level:20 Other-SHSP emphasis area:15 Other-Project feasibility:25 Other-Policy conformance:10 Total Relative Weight:100

#### **Program: Roadway Departure**

#### Date of Program Methodology:4/19/2015

#### What is the justification for this program?

- Addresses SHSP priority or emphasis area
- FHWA focused approach to safety

#### What is the funding approach for this program?

Funding set-aside

#### What data types were used in the program methodology?

Crashes	Exposure	Roadway
<ul> <li>All crashes</li> <li>Fatal and serious injury crashe only</li> </ul>	es • Volume	<ul> <li>Median width</li> <li>Horizontal curvature</li> <li>Functional classification</li> <li>Roadside features</li> <li>Other-Roadway width</li> <li>Other-Clear Zone</li> </ul>

#### What project identification methodology was used for this program?

- Excess expected crash frequency with the EB adjustment
- Other-Crash frequency Fatal and serious crashes only
- Other-Facility risk factors/similar geometric types
- Relative severity index

## Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads? Yes

How are projects under this program advanced for implementation?

selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

#### **Relative Weight in Scoring**

Ranking based on B/C:15 Other-Reduction in fatalities and injuries:15 Other-Facility risk level:20 Other-SHSP emphasis area:15 Other-Project feasibility:25 Other-Policy conformance:10 Total Relative Weight:100

#### Program: Safe Corridor

#### Date of Program Methodology:4/19/2015

#### What is the justification for this program?

- Addresses SHSP priority or emphasis area
- FHWA focused approach to safety

#### What is the funding approach for this program?

Funding set-aside

#### What data types were used in the program methodology?

#### Crashes

#### Exposure

All crashes •

Traffic ٠

#### Roadway

•

- Fatal and serious injury crashes • only
- Volume
  - Other-Transit

- Functional classification
- Roadside features
- Other-# Of Lanes

#### What project identification methodology was used for this program?

- Other-Crash frequency fatal and serious injury crashes only
- Other-Facility risk factors/similar geometric types
- Relative severity index

## Are local roads (non-state owned and operated) included or addressed in this program?

Yes

**Are local road projects identified using the same methodology as state roads?** Yes

#### How are projects under this program advanced for implementation?

• selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

#### **Relative Weight in Scoring**

Ranking based on B/C:15 Other-Reduction in fatalities and serious injuries:15 Other-Facility risk level:20 Other-SHSP emphasis area:15 Other-Project feasibility:25 Other-Policy conformance:10 Total Relative Weight:100

#### Program: Wrong Way Driving

#### Date of Program Methodology:5/1/2015

#### What is the justification for this program?

• Addresses SHSP priority or emphasis area

#### What is the funding approach for this program?

Funding set-aside

#### What data types were used in the program methodology?

Crash	es		Exposure	Roadway
•	Other-Wrong incidents	way	driving	

#### What project identification methodology was used for this program?

• Other-Wrong Way Driving Incidents - Potential Freeway Entry Points

## Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads? Yes

#### How are projects under this program advanced for implementation?

• Other-Dedicated projects in TIP

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration Other-Systemic Risk Score:100

#### Program: Other-Vulnerable Road Users

#### Date of Program Methodology:8/1/2013

#### What is the justification for this program?

- Addresses SHSP priority or emphasis area
- FHWA focused approach to safety

#### What is the funding approach for this program?

Funding set-aside

#### What data types were used in the program methodology?

Crashes	Exposure	Roadway
<ul> <li>All crashes</li> <li>Fatal and serious injury crashes only</li> </ul>	<ul><li>Traffic</li><li>Volume</li></ul>	<ul><li>Functional classification</li><li>Other-Roadway width</li></ul>

#### What project identification methodology was used for this program?

- Crash frequency
- Other-Facility risk/similar type geometrics

## Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads? Yes

How are projects under this program advanced for implementation?

• selection committee

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

#### **Relative Weight in Scoring**

Ranking based on B/C:15 Other-Reduction in fatal and serious injury crashes:15 Other-facility risk level:20 Other-Project feasibility:25 Other-Policy conformance:15 Other-SHSP emphasis area:10 Total Relative Weight:100

#### What percentage of HSIP funds address systemic improvements?

50

## HSIP funds are used to address which of the following systemic improvements?

- Add/Upgrade/Modify/Remove Traffic Signal
- Clear Zone Improvements
- High friction surface treatment
- Horizontal curve signs
- Install/Improve Pavement Marking and/or Delineation
- Install/Improve Signing
- Traffic Control Device Rehabilitation
- Upgrade Guard Rails
- Wrong way driving treatments

#### What process is used to identify potential countermeasures?

- Crash data analysis
- Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)
- Engineering Study
- Road Safety Assessment
- SHSP/Local road safety plan
- Other-Crash Modification Clearninghouse
- Other-NCHRP Report 500 Series

#### Does the State HSIP consider connected vehicles and ITS technologies?

Yes

#### Describe how the State HSIP considers connected vehicles and ITS technologies.

RIDOT has created a working Connected/Autonomous Vehicle (CAV) group made up of various departments with RIDOT including Traffic Safety. RIDOT is exploring CAV and its impact to safety.

RIDOT recently finished a pilot with May Mobility on a Transit AV shuttle. Safety data is being reviewed by the Traffic Safety Section and will be discussed as part of the upcoming newly developed SHSP CAV Emphasis Area as part of RIDOT's SHSP 5 year update.

RIDOT has placeholders in the TIP for CAV projects related to safety.

All new traffic signals are CAV (V2I) ready.

RIDOT is exploring pilot programs such as over-height detection for bridge strikes and Wrong Way Driving.

## Does the State use the Highway Safety Manual to support HSIP efforts? Yes

#### Please describe how the State uses the HSM to support HSIP efforts.

RIDOT refers to the HSM methodologies on all aspects of safety where possible, including in the network screening, diagnosis, countermeasure selection, prioritization, and safety effectiveness evaluation categories. Please see attached HSIP Program Manual for more information (please note that this is currently being updated)

## Describe other aspects of the HSIP methodology on which the State would like to elaborate.

RIDOT encourages using the predictive method to use a more sound, data-driven approach to allocating resources that results in fewer fatalities and serious injuries on the nation's roadways. The predictive method (Excess expected crash frequency using SPFs, EB adjustment,) combines crash, roadway inventory and traffic volume data to provide more reliable estimates of an existing or proposed roadway's expected safety performance, such as crash frequency and severity. To achieve this goal, RIDOT undertook a large data collection effort to obtain all of the Model Inventory of Roadway Data Elements (MIRE), which included roadway, traffic, and other data needed to assist the RIDOT make the most efficient decisions where to allocate safety funds and resources. The RIDOT also is working on developing a data maintenance effort to ensure all data collected is updated on a timely basis. RIDOT has begun using the predictive method for some rural segment and will continue to expand in the coming years.

RIDOT has also advanced a systemic, risk based analysis for horizontal curves and is currently collecting data to advance signalized intersection and roadway departure systemic programs in FY21-22.

RIDOT is expanding its systemic program in the next few years, including creating a detailed risk based analysis and process. RIDOT has automated this process by developing a tool that resided on a GIS platform for 2 programs (horizontal curves and STEP). The network screening portion of the tool would automate the site-specific and systemic identification process which is currently performed manually. For site-specific analysis, the tool will use state-specific SPF equations for all facility types, addressing the predictive analysis requirements. The tool will provide a list of locations ranked by Excess Excepted Crash Frequency (Expected Crashes – Predicted Crashes). The systemic analysis will use allow the user to identify potential trends

(geometry, traffic volumes) that have a higher occurrence of fatal and serious injury crashes in RI using the crash and MIRE data incorporated into the tool. Once the potential trends (aka risk factors) are identified, the tool will identify locations that have similar trends which could lead to fatal or serious injury crashes. The user can assign a weighted "point "system for each trend to help prioritize locations based on severity or number of trends at a given site. This allows the tool to provide the user with a "ranked" list of risk-based locations

RIDOT also has its own HSIP Program Manual. The purpose of this document is to describe RIDOT's processes for planning, implementing, and evaluating HSIP funded improvements and to describe its relationship to other safety initiatives found in Rhode Island's SHSP. This document not only helps Rhode Island to demonstrate their own successes, but also serves as a mechanism for other states to achieve improved highway safety.

## **Project Implementation**

### Funds Programmed

#### Reporting period for HSIP funding.

Federal Fiscal Year

#### Enter the programmed and obligated funding for each applicable funding category.

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	\$14,500,000	\$18,296,990	126.19%
HRRR Special Rule (23 U.S.C. 148(g)(1))	\$900,000	\$900,000	100%
Penalty Funds (23 U.S.C. 154)	\$0	\$0	0%
Penalty Funds (23 U.S.C. 164)	\$2,540,877	\$2,540,877	100%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	\$0	\$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	\$100,000	\$100,000	100%
State and Local Funds	\$100,000	\$100,000	100%
Totals	\$18,140,877	\$21,937,867	120.93%

HSIP programmed is what is apportioned in FY21. HSIP obligated includes prior year funds obligated.

## How much funding is programmed to local (non-state owned and operated) or tribal safety projects?

\$4,000,000

#### How much funding is obligated to local or tribal safety projects?

\$4,000,000 Local roads are included in multiple projects that also include state maintained roadways.

#### How much funding is programmed to non-infrastructure safety projects?

\$1,500,000

#### How much funding is obligated to non-infrastructure safety projects?

\$1,500,000 Includes SHSP and HSIP planning (systemic development, CMFs, SPFs) and RSAs.

# How much funding was transferred in to the HSIP from other core program areas during the reporting period under 23 U.S.C. 126? \$0

How much funding was transferred out of the HSIP to other core program areas during the reporting period under 23 U.S.C. 126?

\$0

## Discuss impediments to obligating HSIP funds and plans to overcome this challenge in the future.

#### **Project Delivery**

Currently, RIDOT has two methods for project delivery: state maintenance forces and project management. State maintenance forces are used to install basic signing and striping. This enables RIDOT to advance low-cost safety improvements for horizontal curves, pedestrian crossings, and intersections. Any improvements beyond this require projects to be programmed in a construction project administered by RIDOT's Project Management section. While larger and complex improvements, such as new traffic signals, roundabouts, and high friction treatments require this type of project delivery mechanism, lower cost improvements such as RRFBs, signal modifications, guardrail, etc. must wait 2-3 years for programming and often frustrates our safety partners in such a delay given the low cost and potential immediate benefit. To help streamline lower cost improvements to help drive down fatalities and serious injuries quicker and show action taken to safety stakeholders, RIDOT is developing a Master Price Agreement contract for lower cost improvements to start in FY2021. This will be funded with HSIP funds and will enable RIDOT to reduce project soft costs and accelerate delivery. The Office of Safety will administer these contracts with the goal to turn projects around within 6 months to a year from study.

#### Stakeholder Outreach

Engage safety stakeholders in a discussion about program needs and potential solutions. Consider talking to Highway Safety Office, the MPO, and local agencies.

RIDOT works internally with transportation planners (Statewide Planning), RIDOT GIS analysts, RIDOT safety engineers, RIDOT and OHS highway safety program coordinators and RIDOT operations staff as part of the entire HSIP process, including the identification of critical locations and the selection of appropriate countermeasures/ improvements. These partners are involved in Road Safety Assessments (RSAs) that were performed at many of these locations to facilitate this multi-discipline approach. RIDOT also houses the Office of Highway Safety where the HSIP, HSP, and SHSP are all developed in a coordinated effort focused on developing consistent safety goals. Safety initiatives are now implemented in a more integrated and multi-disciplinary manner, providing RIDOT with more flexibility to direct resources to address particular safety needs. As part of the FAST Act, the RIDOT and OHS along with RI's Office of Performance Management coordinated the development of performance measurement and targets. RIDOT has issues maintaining local support for safety projects. Often, over the project development period, local leadership changes and can undermine the final delivery of the project. As previously discussed, with the implementing of the Master Price Agreement contracts, RIDOT expects a turnaround time within 6 months to a year from study. This will avoid most of the conflict of local leadership turnover.

## General Listing of Projects

## List the projects obligated using HSIP funds for the reporting period.

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Statewide Roadway Departure Mitigation 2020	Roadside	Barrier- metal	5	Miles	\$1800000	\$3000000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial- Interstate	55,000	65	State Highway Agency	Systemic	Roadway Departure	Roadway Departure
HRRR 2021	Roadside	Roadside - other	5	Curves	\$2424854	\$2427854	HRRR Special Rule (23 U.S.C. 148(g)(1))	Multiple/Varies	Multiple/Varies	25,000	50	State Highway Agency	Systemic	Roadway Departure	
Statewide Curves	Roadway signs and traffic control	Curve-related warning signs and flashers	15	Curves	\$200000	\$200000	State and Local Funds	Multiple/Varies	Multiple/Varies	15,000	35	State Highway Agency	Systemic	Roadway Departure	
I-295 at Route 114 Intersection Safety Improvements	Intersection traffic control	Modify control – Modern Roundabout	2	Intersections	\$2257441	\$8000000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial- Other	25,000	35	State Highway Agency	Spot	Intersections	
Statewide Roadway Departure Mitigation 2021	Roadside	Barrier- metal	5	Miles	\$1123222	\$1123222	HSIP (23 U.S.C. 148)	Urban	Principal Arterial- Interstate	55,000	65	State Highway Agency	Systemic	Roadway Departure	
Route 37 West at Natick Avenue	Alignment	Horizontal curve realignment	1	Curves	\$2179413	\$2179413	HSIP (23 U.S.C. 148)	Urban	Principal Arterial- Other Freeways & Expressways	40,000	40	City or Municipal Highway Agency	Spot	Lane Departure	
HSIP On-Call	Miscellaneous	Transportation safety planning	5	Contract	\$1800000	\$3000000	HSIP (23 U.S.C. 148)	N/A	N/A	55,000	65	N/A	Systemic	ALL	Roadway Departure
SHSP	Miscellaneous	SHSP Development	5	Contract	\$1800000	\$3000000	HSIP (23 U.S.C. 148)	N/A	N/A	55,000	65	N/A	Systemic	ALL	Roadway Departure
2021 Intersection & Crosswalk Safety Contract 2	Pedestrians and bicyclists	Rapid Rectangular Flashing Beacons (RRFB)	5	Intersections	\$1800000	\$3000000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	55,000	65	State Highway Agency	Systemic	Pedestrians	Roadway Departure
2021 Intersection & Crosswalk Safety Contract 1	Pedestrians and bicyclists	Pedestrian warning signs	5	Crosswalks	\$1800000	\$3000000	HSIP (23 U.S.C. 148)	Urban	Multiple/Varies	55,000	65	State and Local	Systemic	Pedestrians	Roadway Departure

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST(\$)	TOTAL PROJECT COST(\$)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
2019 STC	Intersection traffic control	Intersection traffic control - other	5	Intersections	\$1800000	\$3000000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	55,000	65	State and Local	Systemic	Intersections	Roadway Departure
Safety Improvements to Aquidneck Avenue	Intersection traffic control	Modify traffic signal timing – left-turn phasing	5	Intersections	\$1800000	\$3000000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial- Other	55,000	65	State Highway Agency	Systemic	Intersections	Roadway Departure
Intersection Improvements to Route 6	Roadway signs and traffic control	Sign sheeting - upgrade or replacement		Miles	\$1800000	\$3000000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial- Other	55,000	65	State Highway Agency	Systemic	Intersections	Roadway Departure

ESTIMATE ONLY---TO BE UPDATED IN SEPT ONCE ALL PROJECTS ARE OBLIGATED.

## Safety Performance

### General Highway Safety Trends

## Present data showing the general highway safety trends in the State for the past five years.

PERFORMANCE MEASURES	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fatalities	64	65	51	45	51	84	59	57	67
Serious Injuries	422	366	438	427	407	322	313	308	272
Fatality rate (per HMVMT)	0.820	0.840	0.660	0.570	0.640	1.050	0.734	0.743	1.020
Serious injury rate (per HMVMT)	5.405	4.707	5.705	5.451	5.108	4.024	3.908	3.837	4.150
Number non-motorized fatalities	7	17	14	8	16	23	9	8	19
Number of non- motorized serious injuries	88	69	75	80	57	74	52	63	70



#### **Annual Serious Injuries** Serious Injuries → 5 Year Rolling Avg.







#### **Describe fatality data source.** FARS

To the maximum extent possible, present this data by functional classification and ownership.

Year 2020									
Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)					
Rural Principal Arterial (RPA) - Interstate			0.72	0.78					
Rural Principal Arterial (RPA) - Other Freeways and Expressways			0.69	4.21					
Rural Principal Arterial (RPA) - Other			1.01	0.41					
Rural Minor Arterial	3.4	5.8	3.07	5.32					
Rural Minor Collector			1.6	16.8					
Rural Major Collector	1.6	10	1.08	6.72					

Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Local Road or Street		7	4.68	32.08
Urban Principal Arterial (UPA) - Interstate	7.8	10.6	0.41	0.56
Urban Principal Arterial (UPA) - Other Freeways and Expressways	4.4	11	0.37	0.99
Urban Principal Arterial (UPA) - Other	13	56.6	0.7	3.03
Urban Minor Arterial	9.2	65.8	0.88	6.31
Urban Minor Collector			1.18	35.56
Urban Major Collector	5.8	53.8	0.97	9.07
Urban Local Road or Street	3.6	47.4	0.93	12.28

Year 2020										
Roadways	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)						
State Highway Agency	40.4	130.2	0.52	1.67						
County Highway Agency										
Town or Township Highway Agency	4.8	45	0.06	0.58						
City or Municipal Highway Agency	10	100.8	0.13	1.29						
State Park, Forest, or Reservation Agency										
Local Park, Forest or Reservation Agency										
Other State Agency										
Other Local Agency										
Private (Other than Railroad)										
Railroad										
State Toll Authority										
Local Toll Authority										
Other Public Instrumentality (e.g. Airport, School, University)										
Indian Tribe Nation										

Year 2020

### Safety Performance Targets

Safety Performance Targets

#### Calendar Year 2022 Targets \*

#### Number of Fatalities:67.0

Describe the basis for established target, including how it supports SHSP goals.

Given the impact that the pandemic seems to be having on driver behavior and roadway fatalities, the 2021 fatality projection appears to put meeting the 2020 baseline out of reach. The selected target reflects that 2021 is projected to be a high year and that 2022 should begin a downward trend.

#### Number of Serious Injuries:292.0

#### Describe the basis for established target, including how it supports SHSP goals.

Despite the unusual shifts in fatality trends observed during the pandemic, serious injuries continue to trend downward, an indication that behavioral and engineering countermeasures are reducing the severity of crashes. The current serious injury projection for 2021 is notably lower than historic values.

#### Fatality Rate:0.880

#### Describe the basis for established target, including how it supports SHSP goals.

This rate is calculated based on the 2022 VMT projection and above fatality target.

#### Serious Injury Rate:3.785

#### Describe the basis for established target, including how it supports SHSP goals.

This rate is calculated based on the 2022 VMT projection and above serious injury rate.

#### Total Number of Non-Motorized Fatalities and Serious Injuries:75.0

#### Describe the basis for established target, including how it supports SHSP goals.

The current non-motorized fatality and serious injury projection for 2021 is notably lower than historic values. The proposed target shows progress against the baseline while recognizing that historically, nonmotorized user exposure and incidents are highest during warm weather months yet to come.

## Describe efforts to coordinate with other stakeholders (e.g. MPOs, SHSO) to establish safety performance targets.

RIDOT Safety, Office of Highway Safety, Office of Performance Management, FHWA, and Statewide Planning are all involved in the target setting process. Other safety stakeholders, such as AAA, Growth Smart RI, etc., are also involved to some extent. See attached memo that details the 2022 target setting process.

#### Does the State want to report additional optional targets?

No

#### Describe progress toward meeting the State's 2020 Safety Performance Targets (based on data available at the time of reporting). For each target, include a discussion of any reasons for differences in the actual outcomes and targets.

PERFORMANCE MEASURES	TARGETS	ACTUALS		
Number of Fatalities	57.0	63.6		
Number of Serious Injuries	348.0	324.4		
Fatality Rate	0.720	0.837		
Serious Injury Rate	4.430	4.205		

Non-Motorized Fatalities and Serious Injuries	76.0	78.2
--------------------------------------------------	------	------

#### 2020 Target Assessment

The preliminary totals for Rhode Island's 2020 safety performance measures are 67 fatalities, 272 serious injuries, and 83 non-motorized fatalities and serious injuries. According to FHWA Highway Performance Monitoring System (HPMS) monthly reports, the total VMT for 2020 is 65.47 hundred million VMT, resulting in rates of 1.02 fatalities and 4.15 serious injuries per hundred million VMT.

Unfortunately, Rhode Island did not meet 3 of the State's 5 safety performance targets, and only made significant progress on 3 of the performance measures. As such, Rhode Island will not have any flexibility in HSIP spending in 2022 and will likely have to develop an HSIP Implementation Plan. The key issue is the spike in fatalities in 2020 that feed three of the 5 measures, all which RIDOT did not meet.

The spike in fatalities in 2020 have impacted the Fatal, Fatal Rate, and partially effected the Non-Motorized performance measures. RI's spike is similar to nationwide numbers (due to impact on travel and other pandemic/stay at home related issues), however RIDOT has and continues to perform deep dives into the local data to determine causes/trends in the fatalities. We continue to see a steady decrease in serious injuries. This information was used in the development of the 2022 Targets.

### Applicability of Special Rules

## Does the HRRR special rule apply to the State for this reporting period? Yes

Provide the number of older driver and pedestrian fatalities and serious injuries 65 years of age and older for the past seven years.

PERFORMANCE MEASURES	2014	2015	2016	2017	2018	2019	2020
Number of Older Driver and Pedestrian Fatalities	18	18	5	16	12	8	10
Number of Older Driver and Pedestrian Serious Injuries	37	43	42	50	40	45	46

## Evaluation

#### **Program Effectiveness**

#### How does the State measure effectiveness of the HSIP?

- Change in fatalities and serious injuries
- Lives saved

## Based on the measures of effectiveness selected previously, describe the results of the State's program level evaluations.

As shown in the Progress in Achieving Safety Performance Targets section, RIDOT has see a continuous reduction, over a 5 year average, in serious injuries.

RIDOT tracks crash reductions for all of there HSIP projects. RIDOT uses this data to make changes to a specific improvements if desired results are not achieved.

## What other indicators of success does the State use to demonstrate effectiveness and success of the Highway Safety Improvement Program?

- # miles improved by HSIP
- # RSAs completed
- HSIP Obligations
- More systemic programs

### Effectiveness of Groupings or Similar Types of Improvements

#### Present and describe trends in SHSP emphasis area performance measures.

SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Roadway Departure	Run-off-road	31.2	154.8	0.39	1.96
Intersections	Angle	9.4	157.2	0.12	1.99
Pedestrian	Vehicle/pedestrian	13.6	80.2	0.17	1.01





## Has the State completed any countermeasure effectiveness evaluations during the reporting period?

Yes

## Please provide the following summary information for each countermeasure effectiveness evaluation.

checkiveness evaluation	
CounterMeasures:	Road Diets
Description:	
Target Crash Type:	All
Number of Installations:	15
Number of Installations:	15
Miles Treated:	
Years Before:	5
Years After:	5
Methodology:	Regression cross-section
	29% reduction in all crashes 37%
Results:	reduction in injury/fatal crashes
File Name: Hyperlin	k
CounterMeasures:	Horizontal Curve Delineation
Description:	
Target Crash Type:	All
Number of Installations:	15
Number of Installations:	15
Miles Treated:	
Years Before:	5
Years After:	5
Methodology:	Regression cross-section
	29% reduction in all crashes 37%
Results:	reduction in injury/fatal crashes
File Name: Hyperlin	k
CounterMeasures:	High Friction Surface Treatments
Description:	
Target Crash Type:	All
Number of Installations:	10
Number of Installations:	10
Miles Treated:	
Years Before:	5
Years After:	5
Methodology:	Regression cross-section
Results:	29% reduction in all crashes 37%
	reduction in injury/fatal crashes
File Name: Hyperlin	
CounterMeasures:	Left Turn Protection
Description:	
Target Crash Type:	All
Number of Installations:	10
Number of Installations:	10
Miles Treated:	

Years Before:		5
Years After:		5
Methodology:		Regression cross-section
Results:		29% reduction in all crashes 37% reduction in injury/fatal crashes
File Name:	Hyperlink	

## Project Effectiveness

Provide the following information for previously implemented projects that the State evaluated this reporting period.

### **Compliance Assessment**

### What date was the State's current SHSP approved by the Governor or designated State representative?

07/25/2017

#### What are the years being covered by the current SHSP?

From: 2017 To: 2022

#### When does the State anticipate completing it's next SHSP update?

2022

RIDOT is in the beginning stages of revamping the SHSP and will complete the revision by Spring 2022.

#### Provide the current status (percent complete) of MIRE fundamental data elements collection efforts using the table below.

#### \*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

ROAD TYPE	*MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
	NO.)	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
ROADWAY SEGMENT	Segment Identifier (12) [12]	100	100					100	100	100	100
	Route Number (8) [8]	100	100								
	Route/Street Name (9) [9]	100	65								
	Federal Aid/Route Type (21) [21]	45	10								
	Rural/Urban Designation (20) [20]	100	100					100	100		
	Surface Type (23) [24]	100	100					100	100		
	Begin Point Segment Descriptor (10) [10]	100	100					100	100	100	100
	End Point Segment Descriptor (11) [11]	100	100					100	100	100	100
	Segment Length (13) [13]	100	100								
	Direction of Inventory (18) [18]	100	100								
	Functional Class (19) [19]	100	100					100	100	100	100

ROAD TYPE	*MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION			NON LOCAL PAVED ROADS - RAMPS		ROADS	UNPAVED ROADS	
	NO.)	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Median Type (54) [55]	100	100								
	Access Control (22) [23]	85	44								
	One/Two Way Operations (91) [93]	100	100								
	Number of Through Lanes (31) [32]	100	91					100	100		
	Average Annual Daily Traffic (79) [81]										
	AADT Year (80) [82]										
	Type of Governmental Ownership (4) [4]	100	100					100	100	100	100
INTERSECTION	Unique Junction Identifier (120) [110]			100							
	Location Identifier for Road 1 Crossing Point (122) [112]			100							
	Location Identifier for Road 2 Crossing Point (123) [113]			100							
	Intersection/Junction Geometry (126) [116]			90							
	Intersection/Junction Traffic Control (131) [131]			90							
	AADT for Each Intersecting Road (79) [81]			25							
	AADT Year (80) [82]			50							
	Unique Approach Identifier (139) [129]			100							
INTERCHANGE/RAMP	Unique Interchange Identifier (178) [168]					100					
	Location Identifier for Roadway at					100					

ROAD TYPE	*MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT			NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
	NO.)	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	Beginning of Ramp Terminal (197) [187]											
	Location Identifier for Roadway at Ending Ramp Terminal (201) [191]					100						
	Ramp Length (187) [177]					100						
	Roadway Type at Beginning of Ramp Terminal (195) [185]					100						
	Roadway Type at End Ramp Terminal (199) [189]					100						
	Interchange Type (182) [172]					100						
	Ramp AADT (191) [181]											
	Year of Ramp AADT (192) [182]											
	Functional Class (19) [19]											
	Type of Governmental Ownership (4) [4]											
Totals (Average Perce	nt Complete):	85.00	78.33	81.88	0.00	63.64	0.00	88.89	88.89	100.00	100.00	

\*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

### Describe actions the State will take moving forward to meet the requirement to have complete access to the MIRE fundamental data elements on all public roads by September 30, 2026.

RIDOT is applying for various grants to complete the collection by 2026. RIDOT collected most of the data in 2016 as part of the MIRE data collection effort, however local data for some elements were not collected as part of this effort due to funding.

### **Optional Attachments**

Program Structure:

HSIP Manual\_May8\_FINAL.pdf Project Implementation:

Safety Performance:

SafetyTargets\_2022\_summary\_v1.pdf Targets\_2022\_v3.1.pdf Evaluation:

Compliance Assessment:

### Glossary

**5 year rolling average:** means the average of five individuals, consecutive annual points of data (e.g. annual fatality rate).

**Emphasis area:** means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.

**Highway safety improvement project:** means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.

HMVMT: means hundred million vehicle miles traveled.

**Non-infrastructure projects:** are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.

**Older driver special rule:** applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.

**Performance measure:** means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.

**Programmed funds:** mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.

**Roadway Functional Classification:** means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.

**Strategic Highway Safety Plan (SHSP):** means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

**Systematic:** refers to an approach where an agency deploys countermeasures at all locations across a system.

**Systemic safety improvement:** means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.

**Transfer:** means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.